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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Docket No.258WBN

I hereby certify that this correspondence is being deposited with the United States Postal Service, as "Priority Mail", in an envelope addressed to the Assistant Commissioner for Patents, Box: Patent Application, Washington, D.C. 20231, on this 12th day of July, 2000.



David C. Steere

Assistant Commissioner for Patents
Box: Patent Application
Washington, D.C. 20231

TRANSMITTAL OF PATENT APPLICATION FOR FILING

Dear Sir:

Transmitted herewith for filing is a patent application of:

Inventor(s): Arthur F. Melson and David C. Steere
For: SYSTEM FOR STIMULATING HYDROCARBON
PRODUCTION

Related Application of:

Enclosed are papers, identified as follows:

- 2 - Sheets of Drawings
- X - Informal if this line is checked
- X - Declaration or Oath and Petition, Power of Attorney
- to follow if this line is checked

09517001-071400

- X - Specification and Claims
 - X - Utility Application
 - Design Application
- X - Small Entity Claims
 - X - Individual Inventor
 - X - Small Business Concern
- X - Information Disclosure Statement

A filing fee is calculated as follows:

- Design ----- \$310
- X - Utility Basic Fee ----- \$690
- Total Claims 9 minus 20 = X\$18 =
- Independent Claims 1 minus 3 = X\$78 =
- Fee for Multiple Dependent Claims = \$260

Filing Fee submitted herewith by check ----- \$345
 - Reduced to 1/2 for Small Entity

An Assignment is:

- X - Enclosed, signed by the inventor(s) and the requisite cover sheet therefore, or
 - To Follow
 - No Assignment

Respectfully submitted,

William B. Noll

William B. Noll

Agent for Applicant(s)

Reg. No. 22,721

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Applicant or Patentee: ARTHUR F. MELSON ET AL.
Serial No. or Patent Number:
Filed or Issued:

Docket No: 258WBN

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS UNDER 37 CFR 1.9(f) AND 1.27(c) - SMALL BUSINESS

I hereby declare that I am

- the owner of the small business concern identified below
- X - an official of the small business concern empowered to act on behalf of the concern identified below

NAME OF CONCERN:
ULTRAM WELL STIMULATION AND
SERVICING, INC.

ADDRESS OF CONCERN:
7311 EMERSON DRIVE
PANAMA CITY BEACH, FL 32408

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3 - 18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third-party or parties control(s) or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled:

SYSTEM FOR STIMULATING HYDROCARBON PRODUCTION

by DAVID C. STEERE

described in

- X - the specification filed herewith
- Application Serial No.
- Patent No. , issued

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights in the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

- X - no such person, concern or organization
- persons, concerns or organizations listed below

Full Name:

Address:

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small business entity is no longer appropriate (37 CFR 1.28 (b)).

004720-03400

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING:

DAVID C. STEERE

TITLE OF PERSON OTHER THAN OWNER:

PRESIDENT and CEO

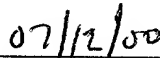
ADDRESS OF PERSON SIGNING:

7311 EMERSON DRIVE

PANAMA CITY BEACH, FL 34208



Signature



Date

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Applicant or Patentee: ARTHUR F. MELSON ET AL.

Docket No.258WBN

Serial No. or Patent No.

Filed or Issued

For: SYSTEM FOR STIMULATING HYDROCARBON PRODUCTION

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS

(37CFR 1.9(f) AND 1.27(b) - INDEPENDENT INVENTOR

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purpose of paying reduced fees under Section 41(a) and (b) of Title 13, United States Code, to the Patent and Trademark Office with regard to the invention entitled

SYSTEM FOR STIMULATING HYDROCARBON PRODUCTION

described in

- X - the specification filed herewith
 - application Serial No. _____, filed _____, or
 - Patent No. _____, issued _____.

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any right in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern, or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- no such person, concern or organization
X - persons, concerns or organizations listed below

Full Name: ULTRAM WELL STIMULATION AND SERVICING, INC

Address: 7311 EMERSON DRIVE, PANAMA CITY BEACH, FL 32408

- Individual X - Small Business Concern - Nonprofit Organization

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of payment, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate, 37 CFR 1.28(b).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful statements may jeopardize the validity of the application, and any patent issuing thereon, or any patent to which this verified statement is directed.

ARTHUR F. MELSON

Name of First Inventor

Signature

Date

DAVID C. STEERE

Name of Second Inventor

Signature

Date

07/12/00

ADDED PAGE TO SMALL ENTITY CLAIM FOR SIGNING BY
THE PARTY HOLDING A GENERAL POWER OF ATTORNEY
ON BEHALF OF INCAPACITATED INVENTOR

I, Ellen Melson, holder of a general power of attorney, hereby declare that I am a citizen of the United States, residing at 3948 East Park Blvd., Plano Texas 75074, and that I am executing and signing the Small Entity Claim to which this is attached as the holder of a general power of attorney for

Arthur F. Melson

Citizen of the United States

Residence and Post Office Address:

3948 East Park Blvd.

Plano, Texas, TX 75074

That, upon information and belief, I aver those facts that the inventor is required to state.

Attached hereto, and forming a part of this Small Entity Claim, is a copy of my appointment as the holder of a general power of attorney for Arthur F. Melson.

Date: _____

Ellen Melson, holder of a general power of attorney
for Arthur F. Melson

004720" F002F960

SYSTEM FOR STIMULATING HYDROCARBON PRODUCTION

Related Application

This application is based on the priority document, Provisional Application, Serial Number 60/144,860, filed 07/20/99, and entitled "Method and Apparatus for Stimulating Hydrocarbon Production," by the
5 inventors hereof.

Field of the Invention

This invention is directed to the field of downwell hydrocarbon production, such as oil and gas, more particularly to the use of high energy ultrasonics, as the means to stimulate the hydrocarbon containing
10 strata surrounding a well casing for its eventual recovery.

Background of the Invention

5 The present invention relates to a system, preferably in the form of a method, to stimulate hydrocarbon flow from wells whose production has been reduced to marginal or entirely unfeasible. The recognition that such wells may still contain a significant pool of oil, for example, has prompted many in the oil industry to investigate economical ways to stimulate production from such wells. A typical correction for such a well is to apply a fracture, also called a "frac." A frac consists of introducing a foreign substance, such as water, steam or inert gas to the well casing under pressure. The pressurized gas or liquid exits the casing through the perforations and actually breaks up obstructions to the flow of hydrocarbons and affects the geological formation in the vicinity of the well. When the frac pressure is released, the well must be cleaned, usually by swabbing, and the foreign substance is pumped out or removed under natural pressure for disposal. When the well has stabilized, an increased flow of liquid and gas from the well can result.

The prior art, as reflected in the following U.S. Patents, has offered a number of different approaches to the conventional frac method:

20 a.) No. 5,836,389, to Wagner et al., teaches an oil recovery system utilizing an impulse wave device to produce impulse waves which travel down-hole and strike a bridge plug. When the impulse waves strike the bridge plug, weak elastic waves are created. After creation, the weak elastic waves propagate in all directions. The weak elastic waves are maintained in a general area near an oil formation by a conventional packer and a diffuser/deflector.

b.) No. 5,826,653, to Rynne et al., is directed to a method which employs multiple sources of acoustical power in an array about and spaced-apart from the surface, and directing a volume of acoustical excitation from the sources into the region containing the material to be recovered.

c.) No. 4,537,256, to Beard, relates to a sonic fracing process that uses sonic waves to crack and loosen the interstices of the oil and gas formation.

d.) No. 4,437,518, to Williams, teaches a recovery system that uses an excitation apparatus lowered through the casing of an oil well until it is submerged in oil. The apparatus includes a gas discharge tube which emits radiation, either ultraviolet or infra-red, into the surrounding oil. Next, another section of the excitation apparatus provides a mechanical energy input to the oil. The effect is to increase the pressure within the well and to cause the oil to flow more freely, thereby markedly increasing the productivity of the well after the treatment has been completed.

e.) No. 4,417,621, to Medlin et al., is directed to a method for recovering oil from a subterranean, viscous oil-containing formation by injecting a gaseous driving fluid such as carbon dioxide into the formation and recovering oil therefrom while simultaneously transmitting vibrations in the seismic frequency range having an amplitude not exceeding 100 Angstrom units through the formation which enhances the flow of the carbon dioxide and thereby increases the efficiency of recovering the oil.

f.) No. 4,343,356, to Riggs et al., relates to a system for the stimulation of fluid flow from a sub surface formation by the creation of a plasma region, or shock wave such as by electrical discharge, to ionize and gasify the material for recovery.

5 While the above prior art offers different approaches to the achieving improved well production, only U.S. Patent No. 5,595,243, to Maki, Jr. et al., suggests the use of transducers as a means to stimulate by the use of ultrasonic waves. This patent discloses a method and apparatus for cleaning the wellbore and the near wellbore region. A
10 sonde is provided which is adapted to be lowered into a borehole and which includes a plurality of acoustic transducers arranged around the sonde. Electrical power provided by a cable is converted to acoustic energy. The high intensity acoustic energy directed to the borehole wall and into the near wellbore region, redissolves or resuspends the material
15 which is reducing the permeability of the formation and/or restricting flow in the wellbore.

The present invention differs from the prior arts procedures described above by the provision of a high powered, ultrasonic system for stimulating the flow of hydrocarbon products, such as gas
20 and oil, from low or non producing wells, where the system hereof is ecologically friendly. The manner by which the present invention achieves these goals will become apparent from the following description, particularly when read in conjunction with the accompanying drawings.

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Summary of the Invention

The invention relates to a system for stimulating hydrocarbon production, such as from low producing wells, including a unique means to effect the stimulation. The process of thw system comprises the steps

5 of lowering a high powered, tuned transducer assembly down a well casing about which stimulation of the surrounding strata is desired. As the transducer assembly reaches the desired depth, the assembly is energized to cause sonic waves to extend laterally therefrom omni-directionally in a very narrow beam focused on the horizontal direction.

10 The excitation causes three simultaneous effects: liquid degassing, cavitation, and breaking of cohesion bonds. The combined effect is to release the hydrocarbon, such as oil and/or gas, and effect a normal or enhanced flow from the well. The process has ecological benefits as no foreign substances need to be added to the well, and since the sonic

15 waves pass unimpeded through the well casing, the process may be used with old wells that have deteriorated over the years, which would o therwise be damaged by conventional fracing procedures.

The transducer assembly is a sealed housing containing a plurality of aligned, cylindrical, piezoelectric members, spaced apart by non

20 conductive spacer elements. The respective piezoelectric members and spacer elements are encased in a high viscous oil medium, such as castor oil, where the oil medium is in communication with a pressure compensator to adjust the pressure of the oil medium with to be equal to the surrounding environment. As part of the energizing mechanism, the

25 sealed housing includes a transformer section in electrical communication with an above ground power source. The purpose of the transformer is

two fold: (a) step up the voltage on the transmission line, and (b) match the transducer impedance to the characteristic impedance of the transmission line ($50 \pm j0 \Omega$).

Accordingly, an object of this invention is the provision of an effective, ecologically friendly system to stimulate oil or gas production from low producing wells, for example.

Another object hereof is the use of a piezoelectric, transducer assembly, engineered to emit sonic waves throughout 360 degrees about the assembly, along a narrow, horizontal beam of about 2 to 3°.

These and other objects will become more apparent to those skilled in the art from the following specification.

Brief Description of Drawings

FIGURE 1 is a simplified representation of a downhole well, into which the transducer assembly of this invention has been lowered to a position to effect a stimulation of the flow of hydrocarbons from the surrounding strata, including an enlarged representation of the energized transducer assembly hereof, illustrating the ultrasonic radiation pattern of the assembly.

FIGURE 2 is an enlarged plan view of the transducer assembly of this invention, where said assembly includes an intermediate transducer section between a transformer section and a pressure compensator section.

FIGURE 3 is a partial sectional view illustrating details of the transducer section of the transducer assembly.

Detailed Description of Preferred Embodiment

The present invention is directed to a system, principally in the form of a method, for stimulating hydrocarbon, i.e. oil and gas, production from a downhole well, where the system utilizes a high powered, ultrasonic transducer assembly to effect the stimulation through liquid gassification, cavitation, and breaking of cohesion bonds, of the affected strata surrounding the well. The invention can best be described with regard to the several Figures, where, like reference numerals represent like components or features throughout the various views.

Figure 1 illustrates in general, but simplified for purposes of understanding, the operation of the transducer assembly 10 of this invention, and its relationship to a downhole well 12, and hydrocarbon bearing strata 14 thereabout, where an exemplary well casing 15 has an I.D. of about 4 1/4" and includes plural perforations 16 in communication with the potential hydrocarbon 15producing strata 14. However, the operation of the system of this invention may be best understood by first considering the construction and operation of the transducer assembly 10.

The transducer assembly 10, illustrated in Figures 2 and 3, is a piezoelectric device that operates at a high frequency, on the order of 20kHz. Piezoelectricity is a phenomenon that has been known for years and can be found with products which occur in nature. Exerting pressure on certain naturally occurring crystals, such as quartz, or man made products, such as doped ceramics, can effect internal activity within the crystals or products. In many substances, the atoms are in the form of ions which are held together very tightly by their electric charges. Pressing the substances displaces the ions so that negative ions move toward one side of the substance, and positive ions toward the other. The

reverse can happen too. Applying an electric signal to the piezoelectric substance makes it vibrate at a precise natural frequency. A well known device for the latter phenomenon, is a quartz oscillator, such as may be used in a clock or watch. With the development of piezoelectric

5 ceramics, higher and more powerful vibrating devices became a reality, making possible the development of the transducer assembly of this invention.

The transducer assembly 10 comprises a sealed housing 20, where an exemplary housing may have an O.D. of about 3 1/4", containing a

10 transducer section 22, a transformer section 24, and a pressure compensator section 26. The transducer section 22 comprises a plurality of aligned cylindrical transducer elements 28, where adjacent transducer elements are spaced from one another by dielectric spacer members 30. The transducer elements 28 are preferably ceramic, doped with

15 leadzirconate with a silver coating on the inner surface, as well as the outer surface. The respective transducer elements 28 are electrically connected in parallel, see Figure 3, and energized by the transformer section 24.

The transformer section includes a transformer (preferably 10 to 1

20 ratio) to step up the voltage applied to the transmission line 31. In a preferred operating system, the transmission line 31 is a coaxial cable, encased in a protective metal shield, extending to an above ground location, such as a logging truck 32. The transmission line is of sufficient length, such as 5000 ft., to reach the desired downhole

25 position, and is arranged coaxially, preferably with a steel armor shield. This shield serves the dual roll of providing strength to bear weight, and

A second important function of the transformer is to match the impedance to the transmission line 31. The reactance on the secondary of the transformer is typically capacitive. The desired impedance at the primary of the matching transformer is approximately $50 \pm j0 \, \Omega$, all resistive, with little or no capacitive or inductive reactance.

In a preferred operation, the transducer assembly 10 is lowered downhole into a well casing to the desired location, typically several thousand feet below ground level. When positioned, the pressure compensator activates to pressurize the oil medium within the sealed housing 20 to equalize the internal pressure to that of the outside pressure. Thereafter, the transducer assembly 10 is energized at a high frequency, on the order of about 20 kHz. As best seen in the blow-up depiction in Figure 1, the radiation pattern from the transducer assembly reveals a very narrow, horizontal beam of ultrasonic energy radiating omni directionally. The 3 dB beamwidth is on the order of 2 to 3° wide. This narrow radiation pattern allows the available energy to be focused horizontally for maximum penetration into the surrounding strata. When

this ultrasonic energy is introduced into a medium like oil bearing sand or methane bearing coal veins, three effects occur: (a) liquid degassing, (b) cavitation, and (c) breaking of cohesive bonds. That is, the molecular agitation introduced in the form of sound energy aids in the separation of liquids, gasses and solids, and thus facilitates the flow of oil and/or gas into the well casing, about the sealed housing 20 and up the casing for recovery by means known in the art.

It is recognized that changes, variations and modifications may be incorporated into the system of this invention, particularly by those persons skilled in the art. Accordingly, no limitation is intended to be imposed on the system hereof except as set forth in the accompanying claims.

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Claims

1. A system for the stimulation and production of a hydrocarbon containing substance from a location below the surface of the earth, where said location is in fluid communication, via a well casing, with said surface, said system comprising the steps of

5 a.) positioning a transducer mechanism within said well casing at said location, where said mechanism is capable of producing a narrow, circular band of high energy impulses extending laterally from said well casing into said location;

b.) maintaining said transducer mechanism at a pressure
10 essentially equal to the area in horizontal proximity to said mechanism; and,

c.) energizing said transducer mechanism.

2. The system according to claim 1, wherein said high energy impulses are horizontally focused within a circular band of between 2 and 3 degrees.

3. The system according to claim 1, wherein said transducer mechanism comprises a plurality of axially aligned, circular transducer elements.

4. The system according to claim 3, wherein said transducer elements are sealed within a pressure controlled housing.

5. The system according to claim 1, wherein said transducer mechanism is energized at a frequency of at least 20 kHz.

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6. The system according to claim 1, wherein said well casing has a series of through holes at said location to facilitate movement of hydrocarbon containing substance into said well casing.

7. The system according to claim 3, wherein each saidducer element is a piezoelectric substance.

8. The system according to claim 7, wherein said piezoelectric transducer is a ceramic.

9. The system according to claim 8, wherein said system is
operated at a frequency on the order of 20kHz.

Abstract of the Disclosure

A system for stimulating the production of hydrocarbon containing substances, such as from oil and gas wells, by the use of a generally cylindrical, high energy producing transducer mechanism. The transducer comprises a series of aligned transducer elements, preferably formed of doped ceramic piezoelectric materials, encased in a housing maintained under controlled pressure by a pressure compensator to equalize the pressure within the housing to that of the surrounding strata containing the hydrocarbon substance. When energized, the respective transducer elements transmit a very narrow, horizontal beam of ultrasonic energy radiating omni directionally, preferably in a narrow band of about 2 to 3°, to thereby focus the energy horizontally for maximum penetration into the surrounding strata.

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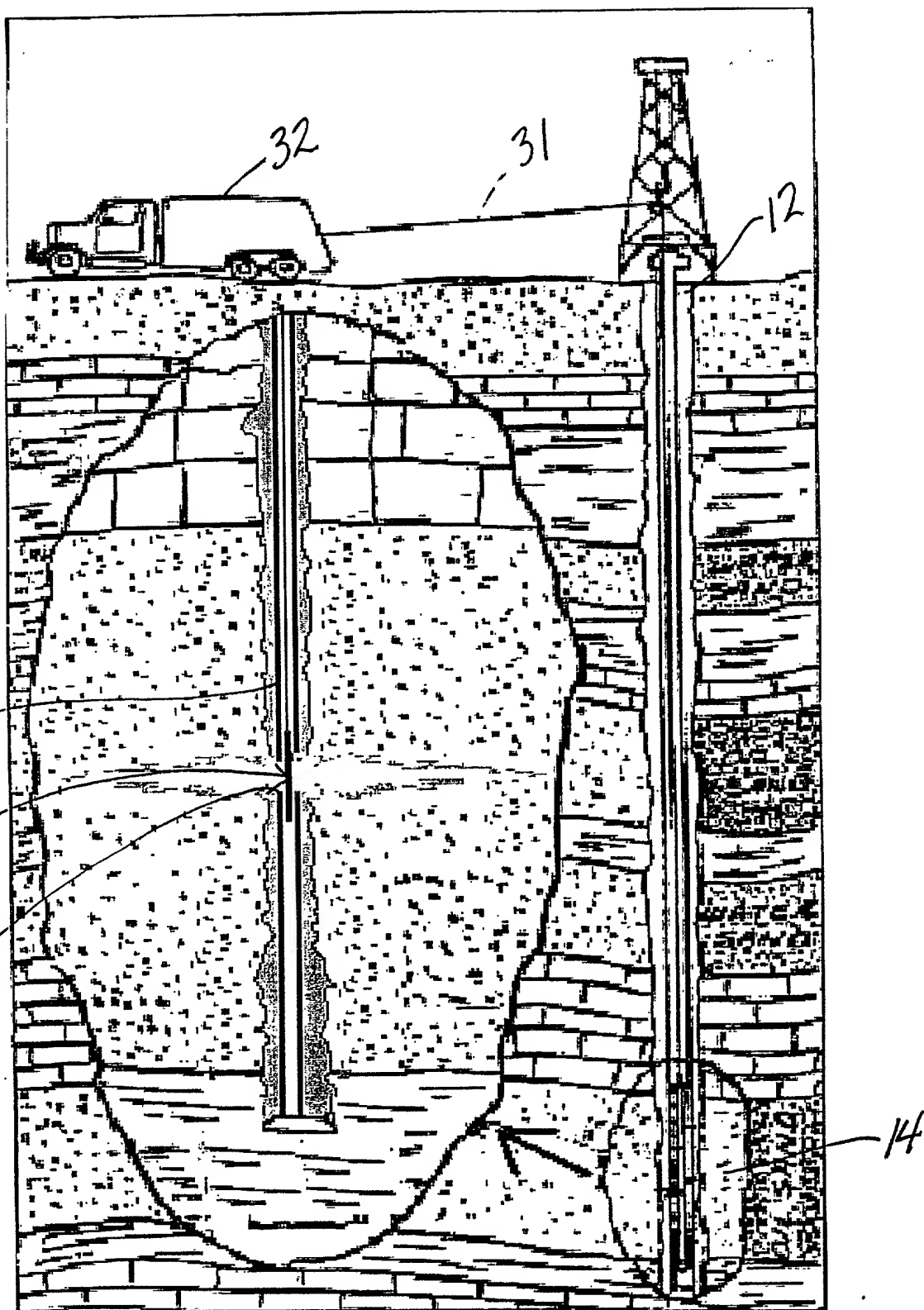


Fig. 1

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Fig. 3

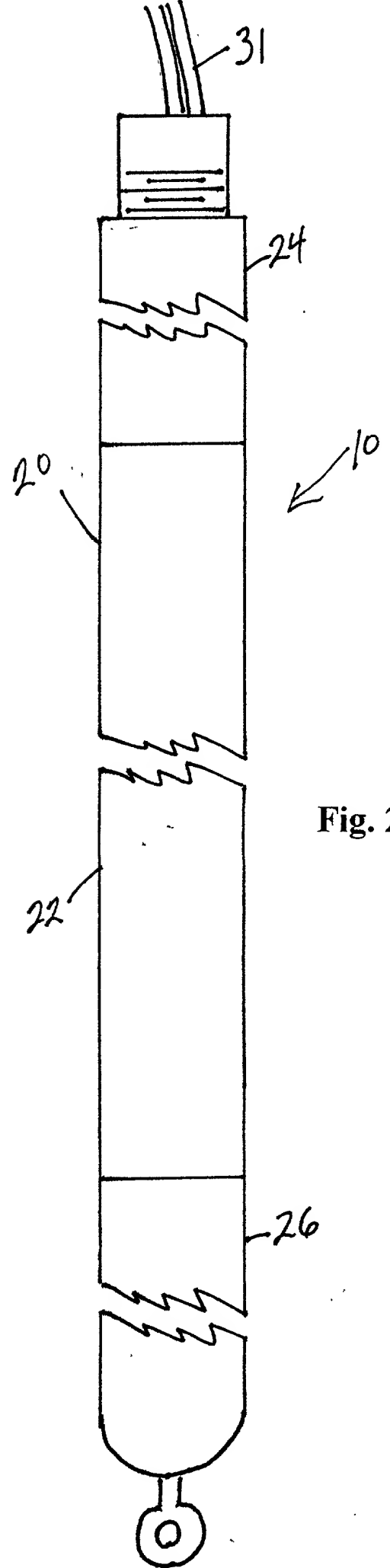
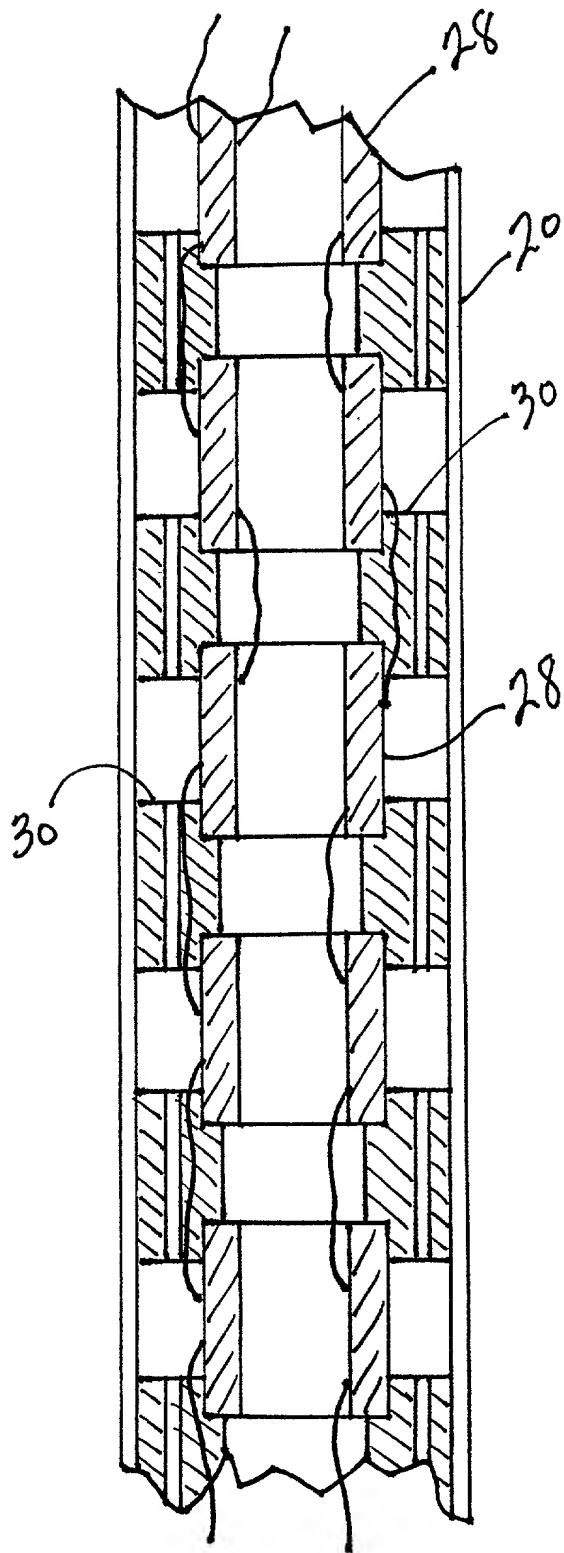


Fig. 2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Docket No. 258WBN

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I/we hereby declare, of my/our own knowledge or on information and belief, that:

My/Our residence, post office address and country of citizenship is/are as stated below next to my/our names(s);

I/We am/are the original, first and sole/joint inventor(s), of the subject matter which is claimed and for which a patent is sought and which is entitled:

SYSTEM FOR STIMULATING HYDRECARBON PRODUCTION

Title of Invention

and which is described and claimed in the attached patent application, including specification and claims:

I/We have reviewed and understand the contents of the specification and claims;

I/We acknowledge the duty to disclose information which is material to the examination of the application in accordance with 37 CFR 1.56(a);

I/We hereby declare that all statements made of my/our own knowledge are true and that all statements made on information and belief are believed to be true, and I/we have been warned that willful false statements and the like are punishable by fine or imprisonment, or both, (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon; and

I/We hereby appoint William B. Noll (Reg. No. 22,721) whose address is

402 Anemone Street
Panama City Beach, FL 32413

Phone/Fax (850) 236-0548

or his duly appointed associate, my/our attorney/agent with full powers of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the Letters Patent, and to transact all business in the U.S. Patent and Trademark Office in connection therewith.

ARTHUR F. MELSON

Full Name of First/Sole Inventor
Post Office Address and Residence:

Signature
3948 EAST PARK BLVD.
PLANO, TX 75074

Date

Citizenship: U.S.A.

DAVID C. STEERE

Full Name of Second Inventor
Post Office Address and Residence:

Signature
7311 EMERSON DRIVE
PANAMA CITY BEACH, FL 32408

Date

Citizenship: U.S.A.

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ADDED PAGE TO COMBINED DECLARATION
AND POWER OF ATTORNEY FOR UTILITY APPLICATION
BASED ON PROVISIONAL APPLICATION

Docket No.258WBN

CLAIM FOR BENEFIT OF EARLIER U.S. APPLICATION
UNDER 35 U.S.C. 120

I hereby claim the benefit, under Title 35, United States Code, #120, of the United States application that is listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that prior application in the manner provided by the first paragraph of Title 35, United States Code, #112, I acknowledge the duty to disclose information that is material to patentability as defined in 37, Code of Federal Regulations, #1.56, and that is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent, that occurred between the filing date of the prior application and the filing date of this application.

PRIOR U.S. APPLICATION DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120

U.S. Provisional Application, S.N. 60/144,860

Filed: 07/20/99

For: METHOD AND APPARATUS FOR STIMULATING HYDROCARBON PRODUCTION

Status: Pending

ADDED PAGE TO COMBINED DECLARATION AND POWER
OF ATTORNEY FOR SIGNING BY THE PARTY HOLDING A
GENERAL POWER OF ATTORNEY ON BEHALF OF
INCAPACITATED INVENTOR

I, Ellen Melson, holder of a general power of attorney, hereby declare that I am a citizen of the United States, residing at 3948 East Park Blvd., Plano Texas 75074, and that I am executing and signing the Declaration to which this is attached as the holder of a general power of attorney for

Arthur F. Melson

Citizen of the United States

Residence and Post Office Address:

3948 East Park Blvd.

Plano, Texas, TX 75074

That, upon information and belief, I aver those facts that the inventor is required to state.

Attached hereto, and forming a part of this Declaration and Power of Attorney, is a copy of my

appointment as the holder of a general power of attorney for Arthur F. Melson.

Date: _____

Ellen Melson, holder of a general power of attorney
for Arthur F. Melson

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POWER OF ATTORNEY

THE STATE OF TEXAS

012654

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF GRAYSON

THAT I, ARTHUR F. MELSON, of the County of Grayson, State of Texas, hereby make, constitute and appoint ELLEN E. MELSON of the County of Grayson, State of Texas, my true and lawful attorney-in-fact for me and in my name, place and stead, and for my use and benefit:

To exercise, do, or perform any act, right, power, duty or obligation whatsoever that I now have or may acquire, the legal right, power of capacity to exercise, do or perform in connection with, arising out of, or relating to any person, item, thing, transaction, business property, real or personal, tangible or intangible, or matter whatsoever;

To ask, demand, sue for, recover, collect, receive and hold and possess all such sums of money, debts, dues, bonds, notes, checks, drafts, accounts, deposits, legacies, bequests, devises, interest, dividends, stock certificates, certificates of deposit, annuities, pension and retirement benefits, insurance benefits and proceeds, documents of title, choses in action, personal and real whatsoever, liquidated or unliquidated, as are now, or shall hereafter become owned by, or due, owing, payable or belonging to me or in which I have or may acquire an interest, and to have, use, and take all lawful ways and means and legal and equitable remedies, procedures and writs in my name for the collection and recovery thereof, and to compromise, settle, and agree for the same, and to make, execute and deliver for me and in my name all endorsements, acquittances, releases, receipts, or other sufficient discharges for the same;

To lease, purchase, exchange and acquire, and to bargain, contract and agree for the lease, purchase, exchange and acquisition of, and to take, receive and possess any real or personal property whatsoever, tangible or intangible, or interest therein, on such terms and conditions, and under such

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acquire, for me and in my name, and under such terms and conditions, and under such covenants as said attorney shall deem proper;

To engage in and transact any and all lawful business of whatever nature or kind for me and in my name;

To sign, endorse, execute, acknowledge, deliver, receive and possess such applications, contracts, agreements, options, covenants, deeds, conveyances, trust deeds, security agreements, bills of sale, leases, mortgages, assignments, insurance policies, bills of lading, warehouse receipts, documents of title, bills, bonds, debentures, checks, drafts, bills of exchange, notes, stock certificates, proxies, warrants, commercial paper, receipts, withdrawal receipts and deposit instruments relating to accounts or deposits in, or certificates of deposit of, banks, savings and loan or other institutions or associations, proofs of loss, evidences of debts, releases, and satisfaction of mortgages, judgments, liens, security agreements, and other debts and obligations, and such other instruments in writing of whatever kind and nature as may be necessary or proper in the exercise of the rights and powers herein granted.

I grant to my said attorney-in-fact full power and authority to do and perform all and every act and thing whatsoever requisite, necessary and proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as I might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that my said attorney-in-fact, or her substitute or substitutes, shall lawfully do or cause to be done by virtue of this power of attorney and the rights and powers herein granted.

This power of attorney shall not terminate upon disability of the principal, whether physical or mental.

This instrument is to be construed and interpreted as a universal power of attorney. The enumeration of specific items, acts, rights, or powers herein does not limit or restrict, and is not to be construed or interpreted as limiting or restricting the powers herein granted to said attorney-in-fact.

The rights, powers, and authority of said attorney-in-fact to exercise any and all of the rights and powers herein granted shall commence and be in full force and effect on and such rights, powers and authority shall remain in

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full force and effect thereafter until written notice of the revocation of the power of attorney is filed on record in the Deed Records of Grayson County, Texas.

EXECUTED this 27 day of March, 1984.

Arthur F. Melson
ARTHUR F. MELSON

THE STATE OF TEXAS I

COUNTY OF GRAYSON I

This instrument was acknowledged before me by the said ARTHUR F. MELSON on this 27th day of March, 1984.

Charles F. Odle
Notary Public, State of Texas

Name printed: Charles F. Odle

Commission expires: December 1986

To the best of my knowledge and belief,
the foregoing is true and correct and any
attached copy is a true copy of the
original document.

William B. Noll
Agent for Applicants
Reg. No. 22,721

Date: _____

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